DOCUMENT RESUME

ED 370 563 IR 055 016

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TITLE Multimedia and Hypermedia: An Invitation for Discussion.
PUB DATE 93
NOTE 7p.; In: Visual Literacy in the Digital Age: Selected Readings from the Annual Conference of the International Visual Literacy Association (25th, Rochester, New York, October 13-17, 1993); see IR 055 055.
PUB TYPE Reports - Evaluative/Feasibility (142) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Computer Assisted Instruction; Educational Media; Educational Technology; *Hypermedia; *Multimedia Instruction; Museums; Natural Sciences; Science Instruction; *Visual Literacy
IDENTIFIERS Multimedia Materials; *Multimedia Technology

ABSTRACT

This paper draws attention to the different applications of multimedia. There are various types of media technologies for communication and information. Museums use visuals which combine video, statues, and static pictures to produce a multimedia display. Multimedia applications are also present in education, more specifically in natural sciences. Computer multimedia is growing in both home and institutional environments. (Contains 7 references.) (JLB)

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Multimedia and Hypermedia: An Invitation for Discussion

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Multimedia and Hypermedia: An Invitation for Discussion

Ora Silverstein

The use of the term "Multimedia" is more and more widespread in various contexts. This creates confusion among non-professionals, namely the general public and also among experts in the field of education and communication. Even experts use phrases such as: "computer-based hypermedia (or multimedia)", "hypertext or hypermedia or multimedia" (Dana, 1990), terms which require definition and clarification. The purpose of this paper is to draw attention and to initiate a discussion and future research in this important subject that will result in better understanding and basic terminology.

The media technologies for communication and informa- tion which are used today are numerous and varied. When we say that "we live in the era of multimedia", we are referring to the extensive use of various media in our civilization. Perhaps the most widespread media in our day is the printed media – we all read newspapers, magazines, books and professional printed literature, using diverse and various technologies. Audio media is also widespread. Radio and various vocal instruments are used for communication, using music, sound and words. Advertisements and advertising gimmicks pop-up before our eyes as static visuals or in motion. These are considered visual media, though lately they are supported by an audio dimension as well. Television, video and cinema are audio-visual-motion media, transmitting pictures and voice in sophisticated methods.

The use of many different types of media for creating experiences which combine pleasure and learning, in mass-media and advertising, is becoming more and more popular.

Distance education as through the open university, which uses video and computer software, cable TV,etc., is enormously popular. Computer games, visits to museums, exhibitions and playgrounds, activities which display human knowledge in all possible fields, are attend by individuals, families and large groups. Disneyland and Disneyworld in the United States and Eurodisney near Paris, France, are the most distinct examples of amusement cities where visitors make use of all the communication media existing in the world today. A visit to these places generates pleasure accompanied by learning experiences. The sensual experience at such sites, assisted by the senses of sight, hearing, smelling and touch are brought about by the use of multimedia.

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Modern art finds its expression in multimedia (Search, 1993). In most modern art museums we find visuals where a combination of a few elements such as video, a statue and a static picture create a wonderful blend of vision, movement and voice. Last August, the Tel-Aviv Museum of Art exhibited Cindy Sherman, an American living in New York and belonging to a group of artists who have tried to turn photography into the center of artistic discussion. They represent the enormous change which has occurred in contemporary art, expressed in wide use of photographic technologies. This is further supported by another exhibition which took place at the same time in the same museum, called "Paradox of the Material Dream". This exhibition focused on two sites. At one, the "Absolut Vodka" and "Benetton" advertising campaigns were demonstrated for examination of the material dream, while the artistic components are huge pictures synchronically projected by eight monitors. In this case, we cannot talk about multimedia means, since a variety of advanced technologies was used in order to create a visual dynamic show. At the second site, the experience was a result of use of audiovisual multimedia in a most sophisticated way. Visitors watched the visuals through windows located on the four walls of a black cube. In each window a different visual was shown, composed of holograms and various video screenings from four different points. The objective of these visuals was reached through the projection of contrasting messages, such as pictures of violence and prosperity in one of the windows, and complementary messages in another. The intensification of the messages was immense.

Multimedia has been used in education for the last thirty years. I shall mention some examples from the field of natural sciences. The teaching of biology, chemistry and physics has developed in the USA and Great Britain since the fifties, until becoming a unique academic field within itself called Science Education.

In new educational science programs developed in the sixties, such as the BSCS in biology, various combined media were used as an aid in teaching biology subjects, phenomena or processes.

In the sixties, the Tel-Aviv University together with the Israeli Educational Television developed a multimedia system for teaching the "human body". This system dealt with five main subjects: self-identity, movement, breathing, blood and digestion. Each unit includes: a booklet with group activities for students, individual work sheets and a teacher's booklet, all of them containing many pictures and tables. For each unit two black and white TV films were produced, as well as a demo and experiments kit. The term multimedia was used for the project from the very beginning of its development.

A few years later, color TV became available in Israel and Israeli Educational TV began broadcasting science films produced in Great Britain, in color, on the human body, as part of the multimedia program*. Hebrew subtitles were added at first, and only later a Hebrew voiceover. As a result, a dynamic process took place over a five year period in which broadcasts in black and white as well as color concerning the human body could be seen on television, part of them in English and others in Hebrew. Today, some

of the scientific movies shown on educational TV in Israel are in English with Hebrew and Arabic subtitles.

The "Life" Story animation series, dealing with the human body, produced in France, has also been broadcasted in Israel for the last five years, in Hebrew.This series substantially differs from the documentary broadcasts concerned with the human body (Silverstein, Tamir, 1991). For teaching the human body and also in all other cases, biology teachers in Israel use TV, as well as video programs in addition to the traditional teaching tools. They also use the press, illustrated work sheets, experiments and observations. Today's learning resources for the subject the human body allow for major diversity. The French "Prosidis" company, who produced the series "Life", also produced illustrated booklets accompanying each TV episode,including stickers and a plastic puzzle regarding the organ discussed in that particular episode. The British Phillip Harris company has recently prepared a data base of the human body on a compact disk and supplementary models and sensors connected to computer software. All these add more possibilities for new experiences.

In South Africa, a new science multimedia program, "Spiders Place", is being developed using the radio, dolls of the size of children, video films, comics magazines and a variety of other activities. This method is meant to meet the needs of a poor, urban population, to whom exact and natural sciences seem such a strange field, that children and adults as one, feel threatened by it. Multimedia instruments are used in order to get students acquainted with educational messages, in a way both pleasant and full of new enthusiasting experiences.

Since teaching of sciences is a field in which illustration helps learning, the use of multimedia is widespread also in fields where kits as those described above do not exist. In Israel, a science teacher would normally use the following aids in class: student's book, teacher's book, laboratory sessions, observations, video films, computer aids, newspaper articles and information centers, as mentioned above. This is the description of a multimedia system. Professional training provided by regional information centers assist teachers in their science teaching activity.

Personal computers were introduced for widespread use in 1981, and recently, the average personal computer's ability is getting close to containing the volume of data required for computer-multimedia. This is a new technology incorporated in all computers of the major companies: Apple's Mackintosh, Commodore's Amiga, IBM computers and IBM compatible PCs. This technology enables the use of various media in order to create new products and display them on a computer monitor: visual text, voice, picture-drawing, animation, and video of analog origin - on tape or disk, or of digital origin, hardware or software supported (Lockard, 1990). The computer, being a digital system, can presently display pictures of analog origin, but cannot process them. The need for a huge memory for the processing of pictures and voice, still forms a serious developmental problem in this field (Renzer, 1992).

Computer-multimedia is presently used for learning (Peterson, 1993). It enables students to listen to music while explanations, illustrations and notes are displayed, and games and information are supplied in an interesting way. Multimedia electronic libraries are being developed and available in various technologies, and are beginning to be used in all academic fields. This is a technology in course of creation. It is used in many other sectors as well, such as industry, business, army, education and consumption of culture. Hi-Tech companies offer operating systems, software and hardware instruments, develop various sections specializing in production of educational programs and data bases; in addition, advertising companies, video and TV also make use of this new technology (Lockard, 1990).

The enlightened citizen is beginning to use computer-multimedia products. People who create in various fields already use this new instrument, and it is expected to become more widespread in the future.

Today educational programs displaying various subjects through computer-multimedia are available (Botto, 1992). Many children around the world use these computer-multimedia programs within the framework of nursery-schools or at home, in order to learn how to read. Since the beginning of 1993, more than half of the nursery-schools in Israel have computers.

Furthermore, you can purchase software programs and produce your own computer-multimedia in home and institutional environments. Computer and hi-tech companies are the reason for this advancement. High priority is given to the development of hardware and software computer-multimedia in a world which is becoming saturated with computers for purposes of office organization and accumulation of information.

This is a new turning point because of the possibilities available for using visual, audio and printed data bases in numerous combinations and three dimension graphics interacting in one PC system.

Today, the term "multimedia" is being used for computer-multimedia technology as well, without clear distinction. The term "hypermedia" is justly used for describing other special computer abilities.

It seems that the phenomenon of multimedia as described above, meaning many different media, is not academically discussed. Computer-multimedia is not only "another technology". It is going to play an important role in the 21st century. Computer-multimedia is added to the many other media interacting with human perception. It is very important to open a discussion and define new terms so as to avoid confusion. This will enable educators, hi-tech and communication media professionals and the general public as well, to attain a more accurate understanding of the multimedia phenomenon occurring today.

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